

ABSTRACT OF THE DISCLOSURE

A pattern detecting apparatus has a plurality of hierarchized neuron elements to detect a predetermined pattern included in input patterns. Pulse signals output from the plurality of neuron elements are given specific delays by synapse circuits associated with the individual elements. This makes it possible to transmit the pulse signals to the neuron elements of the succeeding layer through a common bus line so that they can be identified on a time base. The neuron elements of the succeeding layer output the pulse signals at output levels based on a arrival time pattern of the plurality of pulse signals received from the plurality of neuron elements of the preceding layer within a predetermined time window. Thus, the reliability of pattern detection can be improved, and the number of wires interconnecting the elements can be reduced by the use of the common bus line, leading to a small scale of circuit and reduced power consumption.